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ABSTRACT

Educators participating in distance education have generally not received training in the production of effective video, although they do need to be able to appear in video suitable for effective instruction. The level of video quality required is referred to as "informal" video. Rapid prototyping is a concept in which formative evaluation is implemented using low-fidelity products that simulate the high-fidelity product used in summative evaluation. This technique, which is helpful in the early stages of development, can be used in video production. To find examples of exemplary and problematic techniques, over 32 hours of distance education classes were scanned, and the points of view that operate in a distance education context were identified. Using study results, a prototype was constructed that showed points of view and provided information about sequencing. An appendix contains a pedagogical table, samples of scripts and a video log, and a nonlinear editor screen sample. (SLD)

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Increasing the Efficacy of Informal Video through Rapid Prototyping

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Presented at the
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What is Informal Video?

In video production the lowest form of the génre is commonly referred to as a "home movie". This is used to characterize sloppy pans and zooms, out-of-focus shots and insensitive framing of the subject. The "home movie" is contrasted with "broadcast TV" where skilled professionals are controlling every aspect of the medium, from smooth camera moves and subtle mood lighting to crystal clear audio.

When it comes to distance education there is good news and bad news. The good news is that the "home movie" level of video delivery is not our major problem. The bad news is that another, even lower, form of the génre has been created -- that of "conference video". In this lowest form of video the camera is often fixed, as is the zoom lens. People, documents, furniture, and generally anything that happens to be in view is what is transmitted to the receiving party. It is conceptually a conference call with video added -- except that audio cooperates by having a omni-directional characteristic. That is, anyone around a microphone can be heard. With video one still has to be within the field of view to be seen. The result is that all too often disembodied voices arrive at a receive site with out-of-focus pieces of people and things appearing on the screen. This is all happening because, thanks to automated technology, it can.

Think of it. In a broadcast génre there is a person making decisions about camera moves, a person making decisions about audio levels, a person making decisions about which camera angle would most accurately illustrate the concept being presented. The automated technology can now focus, pan, zoom, and even frame a subject automatically. It can raise and lower microphone levels when one person mumbles and another projects his voice as if on stage. But, they have not yet invented technology that can determine the camera angle that portrays the subject in the clearest manner. In distance education this is a decision that falls on the instructor to make. Most instructors have never had to make these types of decisions in video, but have made them regularly in a traditional classroom environment. We can never expect to train all teachers to be as skillful as broadcast video craftpersons. Neither can we expect to have budgets to allow for these craftpersons to be available for every distance education class session. Therefore a new génre must be created in video which I characterize by the title "Informal Video".

On the continuum between "conference video" and "broadcast video" it falls mid-way just above "home video". Clarity of the message is the primary concern of Informal Video. Causing the least amount of distraction to students and the instructor is the second concern. Camera moves may be sloppy, subjects may disappear from view temporarily, and some audio may need to be repeated from time to time. All-in-all, there should be a congruency between the message that is being conveyed and what we see and hear on the screen. To achieve this goal both the instructor and the students require training in the technology control interface. Combined with appropriate "automated" technology, effective instruction is possible in an Informal Video génre.

Development of the video using rapid prototyping

Rapid prototyping is a concept whereby formative evaluation is implemented utilizing low-fidelity products which simulate the high-fidelity product utilized during summative evaluation. This technique is particularly helpful when you are in the early stages of development and it is not clear exactly what the efficacy of your product design will be. Thanks to the advent of new video technology, the production process has gained the capability of the rapid prototype alternative. Doing formative evaluation previously with video production used to always be a problem because of the time and cost involved. Once a video was finally edited the researcher met a lot of resistance in making changes even though the data suggested it would produce better results. Also professionals always resist the creation of any low-fidelity product stating that nothing can be learned from its creation. The following scenario of the development of *Adapting Instructional Techniques*, I believe, suggests otherwise.

Documentation of On-going Distance Ed Classes

Over 32 hours of distance education classes were scanned for examples of exemplary & problematic techniques as well as for technical difficulties and notable teacher strategies found to be particularly helpful. Clips were taken from these tapes to form a library of exemplary techniques. The fidelity of these tapes were very low-fidelity since no control was exercised by the researchers to maximize the clarity of the technique in question. It was determined at this time that this footage was of too low a fidelity to be exemplary of the techniques in question.

Creation of "Pedagogical Technique" Tables

Research into the methodology of specific pedagogical techniques resulted in a table of techniques in both a Regular Classroom and a Distance Ed context. These tables were then compared to the data extracted from the videotape observations and a prioritized set of pedagogical techniques was generated (see Appendix).

A Rough Script was Created

Given a target audience, a prioritized set of techniques to illustrate, and concrete examples of the suggested content embedded in the previous video documentation, a script treatment was submitted that included both a Regular Classroom scenario, a Distance Ed. Scenario, and a technology orientation. This script was passed around to Radio & TV experts as well as to other experts in the Distance Education field for review. Comments were then integrated into another draft of the script that reflected the suggested changes (see Appendix)

The Integration of Specific Content into a Shooting Script

Dr. Boone created specific scenarios for the delivery of content, via the selected instructional techniques, in both a regular and distance ed. context. It was at this stage that the decision to utilize Mr. Bird, and the physics of how it worked, was determined. At this stage a shooting script was generated and reviewed by the researchers for compliance (see Appendix).

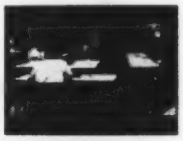
Pre-Production Phase

In this phase determining the appropriate level of the fidelity is critical. In our case it was determined that professional cameramen and actors were too high fidelity since we were still uncertain of specific verbiage to make the scenarios appear to be "real". What we were interested in was the documentation of a class in which the techniques were optimized. Dr. Boone felt that he could teach these concepts to novice students so entry level and training of the "talent" was not critical. Since we were merely documenting at an "informal video" level what transpired in each class setting, there was no pressure on the camera operators to rehearse camera moves prior to videotaping. Simple instructions to them such as "cover the teacher" or "cover the students" sufficed.

Production Phase

The School of Education had at its disposal, two Hi8 camcorders,two SVHS camcorders, and two 3/4 inch U-Matic decks. Students were assigned to these cameras and the class sessions were scheduled. The regular classroom session was videotaped first utilizing 4 cameras covering different points-of-view. The Distance Ed. Classroom was videotaped last utilizing all 4 cameras and both U-Matic decks.

The multiple camera approach not only allowed for more choices during the editing process, but it also increased the chances of their being some footage available from untrained camera personnel for the illustration of a particular technique. It was particularly critical in the Distance Ed. Context since the awareness of a particular point-of-view of the remote site or the instructor site was an instructional objective. For instance, the following illustrates the 6 points-of-view that operate concurrently in a Distance Ed.context.



Instructor Site (Teacher Viewpoint)

Instructor Site (Student Viewpoint)

Instructor Site Monitor (...of Remote Site)

Remote Site (Student Viewpoint)

Remote Site Monitor (...of Instructor Site)

Remote Site (view at the remote site of students)

Post-Production Phase

The production phase generated 20 hours of videotape to be logged. The logging process was accomplished via the interface of a Digital F/X non-linear editor. This interface allowed for the creation of thumbnail representations of each scene accompanied by a scene number that corresponded to the shooting script location for each roll. This process generated printouts of these logs so that preliminary editing strategies could be determined (see Appendix).

Once key scenes were identified from specific points-of-view, the non-linear editor allowed for the "dragging" of these scenes onto a timeline for editing. After these "clips" were trimmed to length, a command was given to produce a tape of this sequence which was called a "rough sequence prototype". This prototype was then subjected to usability testing to gather information regarding clarity of the images sequenced together.

Sequencing and length changes were made as were the addition of simple labels that identified the various points-of-view. This task was simply accomplished in the non-linear editor by highlighting the scenes necessary to change in typing in the necessary modifications. Labels were created and also "dragged" into position above the appropriate scenes and another edited version called a "rough cut prototype" was produced (see Appendix). This prototype was also subjected to a usability test to test labeling conventions, sequencing, clarity of the message, and pacing. At this stage there still remained fluctuations in audio and video quality that would be corrected in a final version.

Based on this information new labels were created, syntax was changed, sequencing was refined, introductory comments were recorded and an orientation section was designed to precede the body of the video examples. Integrating these changes into the product resulted in a tighter, and more technically polished, version of the product called an "Alpha Prototype". This prototype was then shown to Dr. Boone, during which his comments were recorded, and to other experts for their overall reaction.

Further revisions of syntax, labeling,pacing and sequencing were performed to produced a "Beta Prototype" which was distributed for data collection that we are presenting today. From this data we will determine if it is advisable to continue refining the current material into a final version, or if the fidelity is too low and a new production phase must be initiated.

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Kindem, Gorham (1987). *The moving image : production principles and practices.* Glenview, Ill: Scott, Foresman and Company

Appendix

- **Pedagogical Table sample**
- **Rough Script sample**
- **Shooting Script sample**
- **Video log samples**
- **Non-linear editor screen capture**

Discussion

Traditional Class	Distance Education Class	Technical Focus
Generates perception that the students are an important part of the course.	Encourage across site interaction.	Near & Far-end audio alternating frequently
Develops critical thinking skills.	same	Close-up of N&FE student with pertinent content
Can generate various points of view.	same, especially with diverse populations across sites	Near & Far-end audio alternating frequently
May ask thought provoking questions.	same	Close-up of N&FE student with pertinent content
Develops skills that are important to many professions.	same	Close-up of N&FE student with pertinent content
Develops the ability to communicate with others both professional and lay.	same	Near & Far-end audio alternating frequently especially between students
Fosters the sensitive and precise language of the subject.	Document camera may be used to display definitions of terms.	Instructor level prep on DocCam presented to both N&FE students. + Student level prep (spontaneous) on both N&FE DocCams.
Socializes students into the values and perspectives of the subject, discipline, and profession.	Be sure students exchange names and experiences across sites.	Close-ups of students as both N&FE students are "Panned" and introduced. + individual students address other specific students at "other" end. DIFF: knowing where the student is at either location to react fast enough.
Useful way to assess knowledge, skills, and attitudes of groups of students.	same	

• **Pedagogical Table sample**

VIDEO	TIME	*AUDIO*
36. MS/INST as he addresses class. we see him slightly from the rear to show part of class	9:15	35. INST: OK class, I have a few questions that I would like to ask relative to today's topic. I will display it on the DocCam so that you can ponder your answers. (etc)
9. FREEZE ACTION: super paraphrase test of strategy as professor states it.	9:45	9. VO-PROF: I had created the main question as an electronic slide in order to spark some interest (by a change in medium) as well as to give them time to think as well as to absorb the question.
1. the Instructor switches from the electronic slide to the paper on the DocCam with one sentence on the top of the page.	10:00	11. INST: I am going to begin the questioning with a simpler question that will eventually lead to the answer of this broader question. I've put these developmental questions on a separate sheet of paper so that we can log your responses.
13. CU: Instructor's eyes as he scans the student's faces ... both Near & Far-End.	10:15	12.
1. MLS Instructor from the rear so we can see his view of FE & NE students.	10:30	1.
14. MS/PAN : student's faces to reflect the view of instructor. (they are thoughtful but hesitant) (Maintain POV of instructor to FE, ie show monitor view)	10:45	15.
17. CU monitor of FE ... as the instructor calls out John's name, we see him in the view and he turns his head toward the camera	11:00	16. INST: Come now, surely someone has some thoughts on this matter ... John, what do you think?

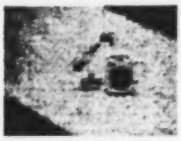
Production Title: disted training: QUESTION & ANSWER

VIDEO	TIME	*AUDIO*
32.	16:00	32. INST: Now, get with someone and write down what some of your observations are.
33. NE & FE (group breaks into whatever combination they wish and instructor responds to questions.)	16:15	33. INST RESPONDS as required
34.	16:45	34. Does someone what to tell me their observations.
35. Student moves to NE document camera • keypad switch to DocCam • FE view of switch to DocCam	17:00	35. why not let someone here (at the NE) be the recorder to log the responses on the document camera .
36. FREEZE	17:15	36. INST: (voice over) • if you don't see the observations, then you're less likely to remember them. • the gestalt is visible on the board too so that everyone has the benefits
37. NE & FE students start • Views of both sites	18:00	37. instructor sorts the questions: • "good" observation • "that's similar to Joe's • any other ideas? (wait 10 seconds)
38.	18:30	38. Now break into groups and brainstorm how it works • (If they ask for any interaction to test the bird, then the Instructor does it.) • (In some cases a FE student may ask a NE student to manipulate the bird)
39. FREEZE	19:00	39. INST: (voice-over) • it is important that they feel free to manipulate the variables • (Important to be guide on the side instead of sage on the stage)
40. NE as instructor asks for FE participation • FE as student moves to their DocCam • NE as they switch to DocCam	19:10	40. We need another recorder to log these responses • How about someone at the Far-End? •

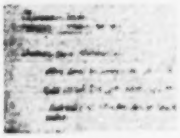
Source Log: 2way.log

32a : Bill askes to break into groups 2way_VTEL1

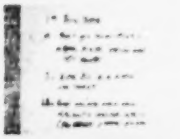
32b : cu's of NE groups discussing 2way_VTEL1



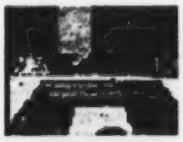
33 : Julie @FE asked to share first 2way_VTEL1



33b :NE doc camera utilization for Wendy's 2way_VTEL1



33c : NE doc camera utilization for Tony's group 2way_VTEL1



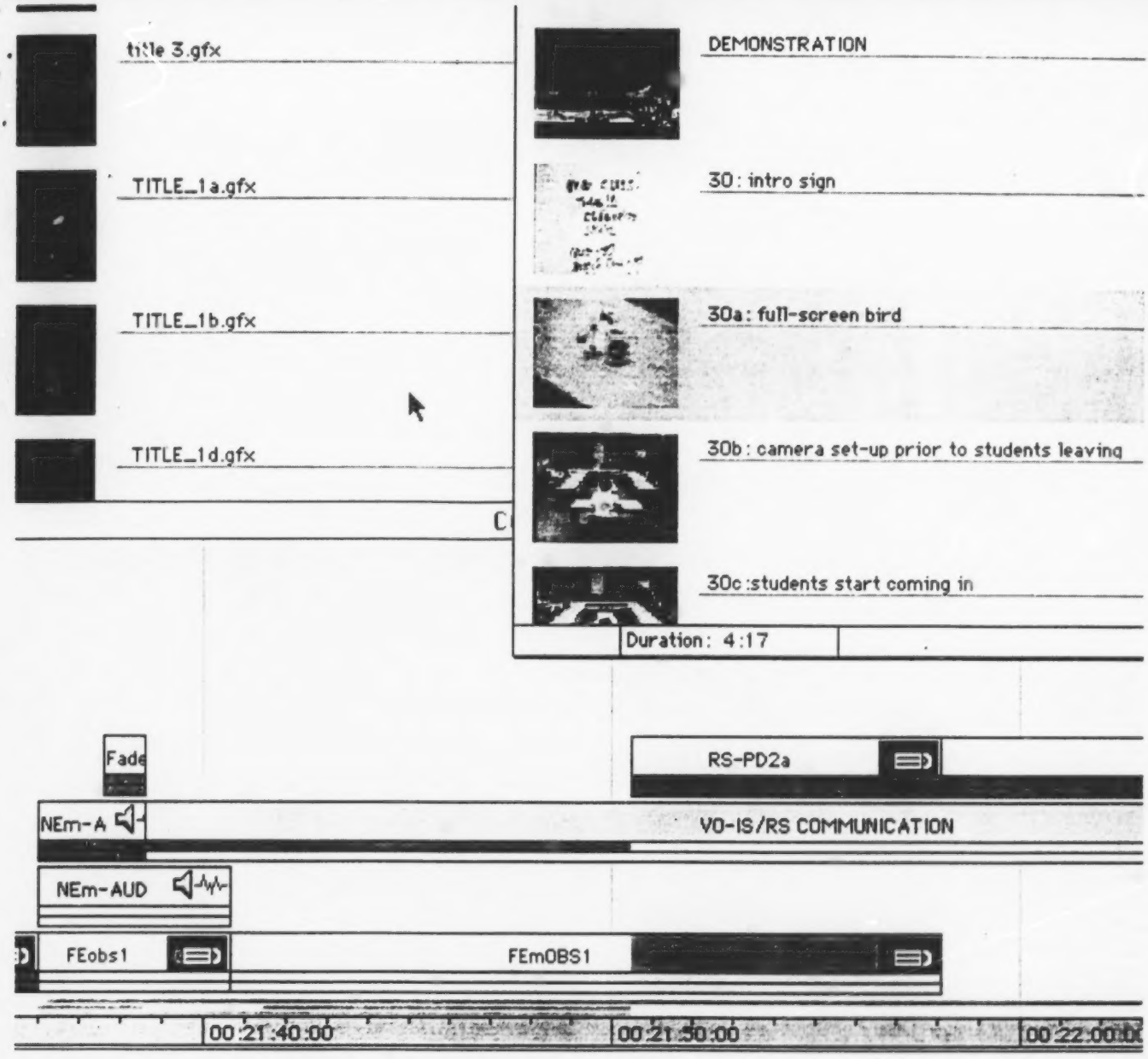
34a : NE assignment of camera operator (Tony) 2way_VTEL1

30a : pre class stuff 2way_FEcam1

38a : Break into groups and discuss what type of 2way_VTEL1

Duration :

- **Video log samples**



- **Non-linear editor screen capture**